REMARKS

Claims 4, 6-8, 10, 12, 14-22 are pending.

[I] Issues under 35 USC § 103

The Examiner has imposed a new rejection over claims 4, 6-8, 10, 12 and 14-22 under 35 USC § 103(a) as being unpatentable over Kim (US 5,674,897) in view of Basinger et al. (US Patent Application Publication No. 2001/0019728). Applicants respectfully traverse the rejection.

The instant application has 3 independent claims, i.e., claims 6 (composition), 8 (method) and 10 (composition).

We now turn to the instant method claims.

[I-A] Independent Method Claim 8 (and claims dependent thereon)

The instant independent method claim 8 is drawn to a "method of activating a plant by applying a plant-activating composition to the plant." Accordingly, the technical area of the cited references is very relevant to the issue of obviousness to the extent that the obviousness analysis requires that the skilled artisan be motivated to look to the references ***to do the method that Applicants have claimed***.

The Examiner relies on Kim as the primary reference. However, Kim teaches compositions which can be used to control nematodes. The Examiner's reasons for finding that the citation of Kim is proper can be found in the following statement:

> Kim teaches a method of applying the composition to plants to control nematodes. Kim does not state that invention activates or promotes plant growth. See abstract, column 4 lines 1-63, column 8 lines 58-65, claims 1-4. However, it is obvious that if the composition is applied to the plant that it would activate plant growth since it is used to control nematodes from destroying plants.

The Examiner indicates that the composition of Kim would aid in controlling of nematodes, and it would follow that by controlling the nematodes, the composition of Kim would help promote plant growth. As noted in the Rule 132 Declaration filed with the February 7, 2006 Amendment (hereinafter the "February 7, 2006 Declaration"), it is Mr. SUZUKI's opinion that promoting plant growth (as used in the present claims) and controlling nematodes are separate concepts.

For guidance as to the inventor's intended scope of the instant method of activating a plant, the Examiner's attention is directed to the present specification. It is clear from the present specification, that the inventive plant activating agent shows its effect by aiding in some necessary function for growth of the plant on a cellular level. At page 1, line 13 to page 2, line 1, the present inventors state,

> It is added by the inventors of the invention that the term "plant growth" includes increasing the amount of growth, increasing the weight of a plant on both sides of the aboveground and the underground. Further increasing greenness of leaves in terms of SPAD, increasing the height of grasses, improving harvest or crop, increasing photosynthesis, accelerating growth of green cells, improving absorption of a fertilizer, increasing sugar content and ascorbic acid of leaves and fruit. More in details, it extends to improving: gloss of leaves, rising-up of leaves, firmness of leaves, an increased thickness of leaves, firmness of stem, short joints of stem, thickness of stem, whiteness of root, the number of fine roots, vivacity or strength of grasses or trees, gloss of fruit, size of fruit, fruiting, color of fruit etc.

The Examiner will note that nowhere in this cited passage is there any indication that the instant method is directed to killing nematodes as taught by Kim. Indeed the present specification has many examples showing the improved plant growth in experiments which are free of nematodes in both the control samples and the experimental samples by adding the plant activating agent of Formula (II). In the February 7, 2006 Declaration, Mr. SUZUKI states that Table A1 shows improved reproductive ability of chlorella cells in a Linsmaier-Skoog medium which is ***free of nematodes*** for both the inventive and comparative examples, and yet there is at least a 27% increase using the esters and acids of inventive Formula (II) over the lower molecular weight acids.

Furthermore, Kim does not teach or suggest that the nematode controlling composition can be used to affect plant growth on a cellular level. In other words, based on the teachings of Kim, the artisan would reasonably believe that there would be no added affect on the plant growth on a cellular level by adding the fatty acid ester of Kim to the composition of Basinger et al.

Lastly, it is noted that the instant method of activating a plant as defined in independent claim 8 includes the application to a plant of: a) a fatty acid derivative of instant formula (II); b) a surfactant; and c) a chelating agent. However, none of these components of the instant method claim 8 is inherently a fertilizer, i.e., a nutrient. These components work to activate the plant in the instantly claimed method.

According to MPEP 2141, when applying 35 USC 103, the standard with which obviousness is determined is that there must be a **reasonable expectation of success**. Applicants respectfully submit that a *prima facie* case of obviousness cannot be said to exist, since the skilled artisan would not have a reasonable expectation of success that applying the nematode controlling composition of Kim to plants would result in activated plant growth, as presently claimed. Accordingly, withdrawal of the rejection with respect to the method claims 4, 8 and 19 is respectfully requested.

We now discuss the patentability of the instant method claims in combination with the instant composition claims.

[I-B] Method Claim 8 and Composition Claims 6 and 10 (and claims dependent thereon)

[I-B-i] No Prima Facie Case

The Examiner relies on Kim for teaching a fatty acid derivative. The Examiner admits that Kim fails to teach or suggest a chelating agent or a fertilizer. The Examiner relies on Basinger et al. for teaching the use of a chelating agent or a fertilizer. The Examiner finds it

obvious to modify the compositions of Kim to include the chelating agent and/or the fertilizer of Basinger et al.

However, the key point of the present invention is that the composition acts as a plant activating agent. This fact is neither taught nor suggested in Kim or Basinger et al. which focus on the use of the compositions as nematicidal agents. The instantly claimed invention has the unexpected advantage relating to plant-activation, regardless of the presence or the absence of nematodes. This advantage can be obtained even without the presence of nematodes at the method-starting stage.

Kim et al. (US 5,674,897) shows controlling of nematodes with 10-20,000 ppm of a fatty acid ester which is preferably a C9-12 fatty acid ester, a surfactant and water. Neither suggestion nor motivation is seen anywhere about plant-activation.

Basinger et al. (US 2001/0019728) shows a nematocide of iodine, including a surfactant, a chelating agent, a fertilizer and nutrient. Neither suggestion nor motivation is seen anywhere about plant-activation.

Accordingly, significant patentable distinctions exist between the present invention and the teachings of the cited references, and a *prima facie* case of obviousness cannot be said to exist over the combination of Kim and Basinger et al.

[I-B-ii] Unexpected Results

As noted above, it is Applicants' position that a *prima facie* case of obviousness cannot be said to exist over the combination of Kim and Basinger et al. However, assuming *arguendo* that a *prima facie* case of obviousness were to exist, the data in the present specification is evidence of the *unexpectedly superior properties* of the inventive composition as plant activating agents which overcomes the obviousness rejection.

The Examiner's attention is directed to the examples in the present specification which show that there is improved growth with the plant activating agent of Formula (II). Specifically, the Examiner's attention is directed to Tables A1 (test of reproductive ability using chlorella cells), A2 (test of hydroponics of tomato seedlings), A3 (test of soil-treatment for tomatoes) and A4 (test of soil-treatment for spinach) on pages 31-34, respectively.

For example, in the February 7, 2006 Declaration, Mr. SUZUKI states that Table A1 shows improved reproductive ability of chlorella cells in a Linsmaier-Skoog medium which is ***free of nematodes*** for both the inventive and comparative examples, and yet there is at least a 27% increase using the esters and acids of inventive Formula (II) over the lower molecular weight acids. Mr. SUZUKI states that, "This increase in reproductive ability would not be expected based on Kim's teaching which is limited to the affect of the composition on the nematode population."

Of particular note is the evidence in Table A3 (page 33). This table shows the superior properties which are engendered by the combination of a compound of formula (II), $RCOO(AO)_nX^1$, with at least one of a surfactant and a chelating agent, as presently claimed. Comparative Example A3-3 shows that a composition containing a C8 acid, caprylic acid, and a surfactant has a fresh weight amount of 94 which is much less than the fresh weight of 108 for Inventive Example A3-1 incorporating stearic acid and a surfactant in the test for soil treatment for tomatoes. This caprylic acid (C8 acid) of Comparative Example A3-3 in the present specification is very close in structure to the C9 acid, pelargonic acid (PA), used in the example in Table 1 in column 7, lines 52-55 of Kim.

Based on this evidence in the specification, the skilled artisan would reasonably conclude that the inventive composition comprising a compound of formula (II), $RCOO(AO)_nX^1$, and at least one of a surfactant, fertilizing agent and a chelating agent has ***superior*** plant activating properties for all compounds over the range wherein R represents an alkyl or alkenyl group having 11 to 29 carbon atoms when compared to the explicitly disclosed compounds of Kim. Since Kim's teaching is limited to the use of the fatty acid ester ***without a surfactant, fertilizing***

agent or chelating agent in killing nematodes, the artisan would have no expectation that the fatty acid ester (alone) of Kim would activate plants, as presently claimed.

In view of the fact that Kim (either alone or in combination with Basinger et al.) does not teach or suggest such an improvement in properties based on the size of the fatty acid (ester) and at least one of a surfactant, fertilizing agent and a chelating agent, the inventive composition is unexpected based on the cited art. As such, the *prima facie* case of obviousness is overcome and withdrawal of the rejection is respectfully requested.

We now specifically discuss claim 10.

[I-B-iii] Claim 10: Improved Efficiency of Absorbing the Fertilizer

An aspect of the present invention is that the use of the plant activating agent improves the efficiency of absorption the fertilizer. The Examiner will note that independent claim 10 includes a fertilizer in the plant activating composition. After careful consideration of the teachings of Kim and Basinger et al, it is clear that this improved efficiency would not be expected.

The Examiner's attention is directed to the experimental evidence in Table 2 on page 26 and in Table A-2 on page 32 of the specification which are reproduced herein for the Examiner's convenience.

TABLE 2

		Plant-activating composition		Test result: Efficiency for absorbing a fertilizer	Test result: SPAD value
		Kind	Concentration (ppm)		
Inventive product	2-1	Citric acid C16 diester	100	137	113
		POE(20) sorbitan monooleate	500		
	2-2	Citric acid C18 monoester	50	140	118
		POE(20) sorbitan monooleate	150		
	2-3	Citric acid C18 monoester	50	142	120
		POE(20) sorbitan monooleate	150		
		EDTA.4Na	20		
	2-4	Citric acid C18 monoamide	100	134	109
		POE(20) sorbitan monooleate	300		
	2-5	Citric acid C18 diester	400	139	124
		POE(20) sorbitan monooleate	400		
	2-6	Citric acid C18 monoamide	100	138	117
		POE(20) sorbitan monooleate	200		
		Malonic acid	30		
	2-7	Citric acid C14 monoester	100	134	112
		POE(20) sorbitan monooleate	150		
	2-8	Citric acid C20 monoester potassium salt	100	138	119
		POE(20) sorbitan monooleate	200		
	2-9	Citric acid C18F1 monoester	100	136	116
		POE(20) sorbitan monooleate	200		
	2-10	Citric acid C18 monoester sodium salt	40	134	115
		POE(20) sorbitan monooleate	250		
	2-11	Citric acid C16 monoester potassium salt	100	132	113
		POE(20) sorbitan monooleate	250		
Comparitive product	2-1	Lactic acid	100	98	100
		POE(20) sorbitan monooleate	200		
	2-2	Culturing solution only (non-treated area)	—	100	100

(Notes) In the Table, POE is an abbreviation of polyoxyethylene. The number in the parentheses is the average number of ethylene oxide moles added. (This is the same hereinafter.)

In each one of the Inventive Examples 2-1 to 2-11, there was an improvement of at least 32% (compare Inventive Example 2-11 with Comparative Example 2-2) in the efficiency of absorbing the fertilizer. These compositions include a variety of fatty acid derivatives ranging from C14 to C20.

TABLE A2

		Plant-activating composition		Test result: Efficiency for absorbing a fertilizer	Test result: SPAD value
		Kind	Concentration (ppm)		
Inventive product	A2-1	Myristic acid (LUNAC MY-98)	100	130	114
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	500		
	A2-2	Stearic acid (LUNAC S-98)	50	142	118
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	150		
	A2-3	Stearic acid (LUNAC S-98)	50	147	122
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	150		
		EDTA.4Na	20		

TABLE A2-continued

		Plant-activating composition		Test result: Efficiency for absorbing a fertilizer	Test result: SPAD value
		Kind	Concentration (ppm)		
	A2-4	Oleic acid	100	138	117
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	300		
	A2-5	Behenic acid (LUNAC BA)	100	122	110
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	150		
	A2-6	Methyl laurate (EXCEPARL ML-85)	50	126	109
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	150		
	A2-7	2-decyl-1-terta decanoic acid	100	130	112
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	150		
	A2-8	2 Ethyl hexyl myristate	400	132	111
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	600		
	A2-9	Stearic stearate (EXCEPARL SS)	100	139	112
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	200		
	A2-10	Stearic stearate (EXCEPARL SS)	100	144	115
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	200		
		Malonic acid	40		
	A2-11	Ethylene glycol distearate (EMANON 3201M)	150	140	114
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	400		
	A2-12	POE(12) monolaurate (EMANON 1112)	200	136	113
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	300		
	A2-13	$C_{21}H_{43}COO(EO)_5COC_{17}H_{35}$	250	132	116
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	500		
	A2-14	$C_{29}H_{59}COO(PO)_3(EO)_2COC_{17}H_{35}$	150	138	118
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	300		
	A2-15	$C_{17}H_{33}COO(PO)_{15}H$	100	130	118
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	250		
Comparative product	A2-1	Acetic acid	50	90	96
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	150		
	A2-2	Lactic acid	100	92	94
		POE(20) sorbitan monooleate (RHEODOL TW-O120)	300		
	A2-3	Non-treated area (culturing solution only)	—	100	100

In each one of the Inventive Examples A2-1 to A2-15, there was an improvement of at least 22% (compare Inventive Example A2-5 with Comparative Example A2-3) in the efficiency of absorbing the fertilizer. These compositions include a variety of fatty acid derivatives ranging in carbon number.

It is clear from this data that the inventive plant activating agent improves the efficiency of absorption the fertilizer. Since the skilled artisan would not expect such improvements based on the teachings of Kim and Basinger et al, it is clear that this improved efficiency would not be expected. As such, composition claim 10 (and claims dependent thereon) is patentable over the combination of Kim and Basinger et al.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. Reg. No. 43,575 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

By Garth Dahlen #43575
John W. Bailey
Registration No.: 32,881 for
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant